

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

REVISED

TITLE V PERMIT NO. V-06-007

EAST KENTUCKY POWER COOPERATIVE, INC.

HUGH L. SPURLOCK GENERATING STATION

MAYSVILLE, KY

JULY 31, 2006

COMBUSTION SECTION, REVIEWER

SOURCE I.D. #: 21-161-00009

SOURCE A.I. #: 3004

ACTIVITY ID #: APE20040001

SOURCE DESCRIPTION:

An application for renewal of Title V Permit V-97-050 Revision II for the East Kentucky Power Cooperative Inc.-Hugh L. Spurlock Generating Station was received on June 8, 2004. The permit renewal is combined with renewals of the Phase II Acid Rain and NO_x Budget permits, and is combined with a major modification for the construction of boiler Unit 04 (Emission point 17).

East Kentucky Power Cooperative (EKPC) submitted an air permit application dated September 13, 2004 seeking a permit to construct a new 300 megawatt (MW) net nominal generating unit (Emission Unit 17) at its existing Spurlock Generating Station located at Maysville in Mason County, Kentucky. In response to comments from the Division for Air Quality (DAQ), the National Park Service (NPS), and the U. S. EPA, additional information was received from EKPC on December 22, 2004, May 12, 2005, May 26, 2005, August 24, 2005, October 27, 2005, November 9, 2005, November 16, 2005, December 8, 2005, December 21, 2005, January 13, 2006, and January 20 2006. The application was considered to be administratively complete upon receipt of the revised modeling information on January 20, 2006.

The new unit will utilize circulating fluidized bed (CFB) technology. The new CFB boiler will be equipped with Selective Non Catalytic Reduction (SNCR), Pulse Jet Fabric Filters (PJFF), Dry Scrubbing (DS), and Limestone Injection pollution control systems.

Existing equipment at the Spurlock Generating Station includes two (2) Pulverized Coal boilers and one Circulating Fluidized Bed boiler. Emission Unit 01 is a 3500mmBtu/hr dry-bottom wall-fired boiler equipped with an electrostatic precipitator and low-NO_x burner, for which construction began before 1971. The precipitators were installed as a part of the original plant construction but were rebuilt in 1990-1992. In addition, a selective catalytic reduction device was installed in 2003.

Emission unit 02 is a 4850 mmBtu/hr tangentially fired boiler equipped with electrostatic precipitators, low-NO_x burners, and a flue gas desulfurization (FGD) system and was subject to review under 40 CFR 52.21 (PSD) in November, 1979. The FGD system is not currently operating, and has not operated since 1985. A selective catalytic reduction device has been installed since the original Title V permit issuance.

U.S. EPA has brought an action in U.S. District court concerning EPA's allegation of past NSR violations on emission unit 02. A trial is currently scheduled in the near future. Upon resolution of the issues raised, the Division may be required to reopen this permit.

Emission unit 08 is a 2500 mmBtu/hr CFB boiler equipped with a baghouse filter, flash dry absorber (FDA), and a selective non-catalytic reduction (SNCR) unit.

The 144 mmBtu/hr auxiliary boiler (Emission Unit 03) is no longer in operation and has been permanently removed from the site. There is a natural draft cooling tower, coal/limestone/ash material handling equipment, an emergency liquefied petroleum gas generator, and fuel oil storage tanks. The existing natural draft cooling tower, coal/limestone/ash material handling equipment, and fuel oil storage tanks will increase utilization when the new CFB boiler becomes operational.

The new facilities that will be constructed as part of this renewal permit will include the CFB boiler (Emission Unit 17) and its associated control equipment. Additional material handling units to be constructed include coal piles, coal silos, a fly ash bed, fly ash silo, and a limestone silo. The existing combustion units (Emission Units 01, 02 and 08) are not part of the proposed major modification, and have previously gone through Prevention of Significant Deterioration (PSD) review.

The proposed project constitutes a major modification of a major stationary source as defined in 401 KAR 51:017, Prevention of Significant Deterioration of Air Quality. The proposed project will result in a significant net emissions increase, as defined in 401 KAR 51:001 Section 1(146), of the following regulated air pollutants: Particulate matter (PM & PM₁₀), carbon monoxide (CO), volatile organic compounds (VOC), fluorides, nitrogen oxides (NO_x), sulfur dioxide (SO₂), and sulfuric acid (H₂SO₄) mist. The project will not emit lead above the significant emission rate for lead of 0.6 tons per year (tpy), set forth in 401 KAR 51:001 Section 1(221) and 40 CFR 51. Project emissions of hydrogen sulfide, total reduced sulfur, and reduced sulfur compounds will also be below significant emission levels and are therefore not subject to PSD review.

The Spurlock Generating Station is located in a county classified as "attainment" or "unclassified" for each of the PSD applicable pollutants pursuant to 401 KAR 51:010, Attainment Status Designations. The Spurlock Generating Station is an existing major stationary source under the PSD regulations as defined in 401 KAR 51:001, Section 1(120). The proposed project meets the definition of a major modification and is subject to evaluation and review under the provisions of the PSD regulation for PM & PM₁₀, CO, VOC, fluorides, NO_x, SO₂, and H₂SO₄ mist. A PSD review performed in accordance with EPA guidance involves the following six requirements:

1. Demonstration of the application of Best Available Control Technology (BACT).
2. Demonstration of compliance with each applicable emission limitation under 401 KAR Chapters 50 to 65 and each applicable emissions standard and standard of performance under 40 CFR Parts 60, 61, and 63.
3. Air quality impact analysis.
4. Class I area impact analysis.
5. Projected growth analysis.
6. Analysis of the effects on soils, vegetation and visibility.

Furthermore, the source will also be subject to Title V, Title IV Phase II Acid Rain and NO_x SIP Call permitting. The Title V permitting procedures are contained in 401 KAR 52:020. The Title IV permitting procedures are in 401 KAR 52:020, Permits, 401 KAR 52:060, Acid Rain Permit, 40 CFR

Part 72, 40 CFR Part 76, and 40 CFR 97. NO_x SIP Call permitting procedures are in 401 KAR 51:160 and 40 CFR 96. This Statement of Basis addresses the proposed conditions of the PSD/Title V permit and the Title IV Phase II Acid Rain permit. The preliminary PSD determination for the Title V permit is also included in this Statement of Basis. This review demonstrates that all regulatory requirements will be met and includes a draft permit that would establish the enforceability of all applicable requirements. This review ensures that the source shall be considered in compliance with all applicable requirements, as of the date of permit issuance for the applicable requirements that are specifically identified in the permit, and specifically identifies requirements that have been determined to not be applicable to the source

The following is a list of currently constructed significant emission units:

- Em. Unit 01 3500mmBtu/hr dry-bottom wall-fired boiler equipped with an electrostatic precipitator and low-NO_x burner, for which construction began before 1971. The precipitators were installed as a part of the original plant construction but were rebuilt in 1990-1992. A selective catalytic reduction device was installed in 2003.
- Em. Unit 02 4850 mmBtu/hr tangentially fired boiler equipped with electrostatic precipitator, low-NO_x burners, and a flue gas desulfurization (FGD) system, subject to review under 40 CFR 52.21 (PSD) in November, 1979. The FGD system is not currently operating, and has not operated since 1985. A selective catalytic reduction device has been installed since the original Title V permit issuance.
- Em. Unit 08 2500 mmBtu/hr pulverized coal-fired CFB design boiler equipped with add on dry lime scrubbing unit as BACT for SO₂ control. A Selective Non-Catalytic Reduction is also utilized to limit NO_x emission to BACT levels. Particulate emissions will be controlled by means of a single pulse jet type fabric filter with multiple compartments; construction commenced 2002.
- Em. Unit 04 4600 tons/hr Coal Handling Operations include: Two (2) reclaim hoppers using water/additives for dust suppression; two (2) crusher houses equipped with baghouse; eleven (11) covered conveyor drop points; and two (2) transfer towers using water/chemical additives for dust suppression; construction commenced 1974.
- Em. Unit 06 120 tons/hr two (2) Fly Ash Silos for truck loading; construction commenced 1969.
- Em. Unit 07 4600 tons/hr Coal Handling: Rotary rail car unloader; barge unloader; sampling tower; and radial stacker; construction commenced 1969.
- Em. Unit 09 860 tons/hr Coal Storage Pile; construction commenced 2002.
- Em. Unit 10 860 tons/hr Coal Silos equipped with baghouse; construction commenced 2002.
- Em. Unit 11 44 tons/hr Bed Ash Handling System equipped with fabric filter baghouse; construction commenced 2002.
- Em. Unit 12 71 tons/hr Fly Ash Handling System equipped with fabric filter baghouse; construction commenced 2002.

- Em. Unit 13 30 tons/hr Lime Stone Prep System equipped with fabric filter baghouse and enclosure; construction commenced 2002.
- Em. Unit 14 30 tons/hr Limestone Storage Silo equipped with fabric filter baghouse; construction commenced 2002.
- Em. Unit 15 30 tons/hr Limestone Unloading using wet suppressant or dust suppressant as control device; construction commenced 2002.
- Em. Unit 16 Cooling Tower equipped with .005% drift eliminators used as control device; construction commenced 2002.

COMMENTS:

Emission Unit 01: Pulverized Coal-Fired boiler, 3500 mmBtu/hr

3500mmBtu/hr dry-bottom wall-fired boiler equipped with an electrostatic precipitator and low-NO_x burner, for which construct began before 1971. Selective catalytic reduction device was installed in 2003.

Regulations applicable to the unit:

401 KAR 51:160, NO_x requirements for large utility and industrial boilers, incorporating by reference 40 CFR 96;

401 KAR 52:060, Acid rain permits, incorporating by reference the Federal Acid Rain provisions 40 CFR Parts 72 to 78;

401 KAR 61:005, General Provisions;

401 KAR 61:015, existing indirect heat exchangers with a capacity more than 250 mmBtu per hour and commenced before August 17, 1971;

40 CFR Part 64, Compliance Assurance Monitoring;

40 CFR Part 75, Continuous Emission Monitoring.

Pursuant to 401 KAR 61:015, Section 1 (3)(e), sulfur dioxide emissions shall not exceed 3.0 lb/mmBtu based on a twenty-four-hour average. The permittee agreed to voluntarily lower the allowable limit is to avoid significant ambient impacts (SIA) exceedance of sulfur dioxide for the construction of Gilbert 4 (Emission Unit 17). The unit has SO₂ allowances as listed in 40 CFR 73.10 of 9821 allowances per year through the year 2009, then 9841 allowances per year beginning in the year 2010. Pursuant to 401 KAR 61:005, Section 3 and 40 CFR Part 75, a continuous emission monitoring system (CEMS) for sulfur dioxide is required. 40 CFR Part 64 does not apply to this unit for sulfur dioxide because there are no control devices.

Previously, this unit was subject to 401 KAR 61:015 Section 4(4) and Regulation No. 7. However, because the electrostatic precipitators were rebuilt in 1990-1992, the emission limits in 401 KAR 61:015 Section 4 (2) now apply instead. Pursuant to 401 KAR 61:015, Section 4(2), opacity shall not exceed 20 percent based on a six-minute average except that a maximum of 40 percent opacity is allowed for a period of not more than six consecutive minutes in any sixty minutes, except under conditions when building a new fire for the period required to bring the boiler up to operating conditions provided the method used is that recommended by the manufacturer and the time does not exceed the manufacturer's recommendations. Continuous opacity monitoring (COM) is required by 401 KAR 61:005. If any six-minute average opacity value exceeds the opacity standard, EKPC shall either accept the COM reading or perform a Method 9, weather conditions permitting, if EKPC

believes the COM reading to be inaccurate, and initiate appropriate investigative and corrective action. If the exceedance occurs during start-up or shutdown, investigation of the cause is not required.

Pursuant to 401 KAR 61:015, Section 4(1), the unit shall have emissions of particulate matter (PM) ≤ 0.14 lb/mmBtu based on a 3-hour average. As the unit's uncontrolled PM emissions would qualify it as a major source, and it has an emission limit and a control device for particulate matter, 40 CFR Part 64 applies to particulate matter. EKPC does not continuously monitor PM nor is it required to do so. Per EKPC's CAM plan filed on October 27, 2005, EKPC will use opacity as a surrogate for PM continuous monitoring, along with other indicators of the ESP's performance, such as precipitator electrical data. EKPC will conduct tests to establish the level of opacity that will be used as an indicator of particulate matter emissions. Pursuant to 40 CFR part 64.4(c)(1), the testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant-specific emission unit. The opacity indicator level shall be established at a level that provides reasonable assurance that particulate emissions are in compliance when opacity is equal to or less than the indicator level.

EKPC will monitor COM readings, conduct weekly stack observations, and record voltage and current readings of the precipitator's transformer/rectifier sets once per shift. If any 6-minute COM average opacity over a 3 hour-period (which is the averaging time for the PM limit) exceeds the opacity indicator level, EKPC will initiate an inspection of the ESP and/or COM and make any necessary repairs. If EKPC believes that the COM reading is inaccurate, it must conduct a Method 9, weather conditions permitting, or alternatively, accept the accuracy of the COM reading. If 5 % of COM data for a calendar quarter show excursions above the indicator level, a stack test will be performed during the next quarter unless waived by the Division. If voltage and current data are found to be outside normal ranges, corrective action will be initiated. If emissions during the weekly stack observation are visible, then EPA Method 9 will be performed to determine the opacity.

Pursuant to 401 KAR 61:015, Section 6 (1), the sulfur content of solid fuels as burned shall be determined in accordance with methods specified by the Division. Pursuant to 401 KAR 61:015, Section 6 (3), the rate of each fuel burned shall be measured and recorded daily. The heating value and ash content of fuels shall be ascertained at least once per week and recorded. The average electrical output, and the minimum and maximum hourly generation rate shall be measured and recorded daily.

401 KAR 51:160, NO_x requirements for large utility and industrial boilers, and 40 CFR Part 96, NO_x Budget Trading Program for State Implementation Plans, apply to this unit. The NO_x Budget Permit application for this unit was submitted to the Division, and received on November 24, 2003. Requirements contained in that application were incorporated into and made part of the NO_x Budget Permit. Pursuant to 401 KAR 52:020, Section 3, the source shall operate in compliance with those requirements. Under the NO_x compliance plan, the annual average NO_x emission rate for each year, determined in accordance with 40 CFR Part 75, shall not exceed the applicable emission limitation under 40 CFR 76.5(a)(2), of 0.50 lb/mmBtu for dry bottom wall-fired boilers.

40 CFR Part 75 Subpart H, which requires a continuous emission monitoring system (CEMS) for NO_x, applies to this unit. 40 CFR Part 64 does not apply to NO_x for this unit, as 40 CFR Part 75 requirements are exempted from CAM.

Pursuant to 401 KAR 61:015, Section 6(3), the permittee shall keep records on average electrical output, minimum and maximum hourly generation rate, fuel analysis for moisture content, ash content, sulfur content as burned, heating value, and the amount of coal burned.

Emission Unit 02: Pulverized Coal-Fired Boiler, 4850 mmBtu/hr

4850 mmBtu/hr tangentially fired boiler equipped with electrostatic precipitator, low-NO_x burners, and a flue gas desulfurization (FGD) system, subject to review under 40 CFR 52.21 (PSD) in November, 1979. The precipitators were installed as a part of the original plant construction but were rebuilt in 1990-1992. The FGD system is not currently operating, and has not operated since 1985; instead, the facility burns low sulfur coal. A selective catalytic reduction device has been installed since the original Title V permit issuance.

Regulations applicable to the unit:

401 KAR 51:160, NO_x requirements for large utility and industrial boilers; incorporating by reference 40 CFR Part 96;

401 KAR 52:060, Acid rain permits, incorporating by reference the Federal Acid Rain provisions in 40 CFR Parts 72 to 78;

401 KAR 59:015, New Indirect Heat exchangers with more than 250 mmBtu per hour capacity and commenced on or after August 17, 1971;

40 CFR 52.21, Prevention of Significant Deterioration of Air Quality (PSD);

40 CFR 60 Subpart D, Standards of Performance for fossil-fuel-fired steam generators, for an emission unit greater than 250 mmBtu/hour and commenced after August 17, 1971;

40 CFR Part 64, Compliance Assurance Monitoring;

40 CFR Part 75, Continuous Emission Monitoring.

Best Available Control Technology (40 CFR 52.21) emission limits set in the initial operating permit (C-76-46). The unit has since become subject to 40 CFR 60 Subpart D.

Pursuant to 401 KAR 59:015, Section 6(1)(c), nitrogen oxides (NO_x) emissions shall not exceed 0.7 lb/mmBtu based on a three-hour average. 401 KAR 59:005, Section 4 and 40 CFR Part 75, Subpart H applies to this unit, which requires a continuous emission monitoring (CEMS) for NO_x. Since the unit's uncontrolled NO_x emissions would qualify it as a major source, it has a NO_x emission limit, and uses a NO_x control device, 40 CFR Part 64 applies to NO_x for this unit. As a NO_x CEMS is required, 40 CFR 64.3(d) requires that the CEMS be used to satisfy CAM requirements as well.

Pursuant to 401 KAR 59:015, Section 4(1), the unit shall have emissions of particulate matter (PM) ≤ 0.1 lb/mmBtu based on a 3-hour average. As there is an emission limitation and a control device for particulate matter, 40 CFR Part 64 applies to particulates. Aside from emission limits and indicator levels, which would be unique to each unit, EKPC's CAM plan for this unit is identical to Unit 1.

Pursuant to 401 KAR 59:015, Section 4(2), the units shall have visible emissions ≤ 20 % opacity, based on a six-minute-average, except that a maximum of twenty seven (27) percent opacity is allowed for a period not more than one (1) six (6) minutes in any hour during building a new fire, cleaning the fire-box, or blowing soot. Continuous opacity monitoring (COM) is required by 401 KAR 59:015 Section 7 (1). If any six-minute average opacity value exceeds the opacity standard, EKPC shall either accept the COM reading or perform a Method 9, weather conditions permitting, if

EKPC believes the COM reading to be inaccurate, and initiate appropriate investigative and corrective action. If the exceedance occurs during start-up or shutdown, investigation of the cause is not required.

Pursuant to 401 KAR 59:015, Section 5(1)(b), the units shall have emissions of sulfur dioxide ≤ 1.2 lb/mmBtu of actual heat input in any three hour period. Pursuant to 401 KAR 59:0015, Section 7(1) and 40 CFR Part 75, a continuous emission monitoring system (CEMS) for sulfur dioxide is required. As the unit's uncontrolled sulfur dioxide emissions would qualify it as a major source, it has a sulfur dioxide emission limit, and has a sulfur dioxide control device, 40 CFR Part 64 applies to sulfur dioxide for this unit when the flue gas desulfurization system is in use. As a sulfur dioxide CEMS is required, 40 CFR 64.3(d) requires that the CEMS be used to satisfy CAM requirements as well.

401 KAR 51:160, NO_x requirements for large utility and industrial boilers, and 40 CFR Part 96, NO_x Budget Trading Program for State Implementation Plans, apply to this unit. The NO_x Budget Permit application for this unit was submitted to the Division and received on November 24, 2003. Requirements contained in that application were incorporated into and made part of the NO_x Budget Permit. Pursuant to 401 KAR 52:020, Section 3, the source shall operate in compliance with those requirements. Under the NO_x compliance plan, the annual average NO_x emission rate for each year, determined in accordance with 40 CFR Part 75, shall not exceed the applicable emission limitation under 40 CFR 76.5(a)(2), of 0.45 lb/mmBtu for dry bottom tangentially-fired boilers. If the unit is in compliance with its applicable emission limitation for each year of the plan, then the unit shall not be subject to the applicable limitation under 40 CFR 76.7(a)(1) of 0.40 lb/mmBtu until calendar year 2008.

Emission Unit 08: Coal-Fired Boiler, 2500 mmBtu/hr, Circulating Fluidized Bed design

The unit is a circulating fluidized bed coal-fired boiler with a rated capacity of 2500 mmBtu/hr installed June 2002 with baghouse, dry lime scrubber, and Selective Non-Catalytic Reduction (SNCR). The CFB design, when operated in conjunction with limestone and dry lime scrubbing unit in the combustion process, reduces sulfur dioxides emissions to BACT level. The primary fuel burned for the unit is pulverized coal, and the secondary fuel is No. 2 fuel oil for startup and stabilization only. Unit will be permit to burn up to 10% of coal fuel by weight ratio of Tire-Derived Fuel (TDF)

Regulations applicable to the unit:

401 KAR 51:017, Prevention of significant deterioration of air quality applicable to major construction or modification commenced after September 22, 1982;
401 KAR 51:160, NO_x requirements for large utility and industrial boilers; incorporating by reference 40 CFR 96;
401 KAR 52:060, Acid rain permits, incorporating by reference the Federal Acid Rain provisions as codified in 40 CFR Parts 72 to 78;
401 KAR 59:016, New electric utility steam generating units;
401 KAR 60:005, incorporating by reference 40 CFR 60, Subpart Da, Standards of performance for electric utility steam generating units applicable to an emission unit with a capacity of more than 250 mmBtu per hour and commenced on or after September 19, 1978;
401 KAR 63:020, Potentially hazardous matter or toxic substances;

40 CFR 63, Subpart B, Requirements for Control Technology Determinations with major sources in accordance with Clean Air Act Sections, Sections 112 (g) and 112(j);
40 CFR 64, Compliance Assurance Monitoring;
40 CFR Part 75, Continuous Emission Monitoring.

State Only Enforceable Applicable Regulations:

401 KAR 59:016, New Electric Utility Steam Generating Units

Pursuant to 401 KAR 51:017, the permittee shall install control devices required to meet BACT.

- BACT for PM/PM₁₀ is a pulse jet fabric filter (baghouse).
- BACT for CO is good combustion controls.
- BACT for H₂SO₄ mist is a dry lime scrubber;
- BACT for fluorides (as HF) is a dry lime scrubber;
- BACT for NO_x is SNCR;
- BACT for SO₂ is a dry lime scrubber

Pursuant to 401 KAR 59:016, Section 3(2), emissions from this unit shall not exceed twenty (20) percent opacity based on a six-minute average except that a maximum of twenty-seven (27) percent is allowed for not more than one (1) six (6) minute period per hour. If any six-minute average opacity value exceeds the opacity standard, EKPC shall either accept the COM reading or perform a Method 9, weather conditions permitting, and initiate appropriate investigative and corrective action.

Pursuant to 401 KAR 59:016, Section 3(1)(b), and 401 KAR 51:017, particulate emissions (PM) shall not exceed 0.015 lb/mmBtu heat input based on a three-hour average. Pursuant to 401 KAR 59:016, Section 6(1), compliance with the 0.015 lb/mmBtu emission limitation shall constitute compliance with the 99% reduction requirement contained in 401 KAR 59:016, Section 3(1)(b). EKPC does not continuously monitor PM emissions, however, per EKPC's CAM plan filed on October 27, 2005, EKPC will use opacity as a surrogate for PM continuous monitoring, along with other indicators of the fabric filters' performance, such as observations and monitoring of the pressure drop across the baghouse.

EKPC will conduct tests to establish the level of opacity that will be used as an indicator of particulate matter emissions. Pursuant to 40 CFR part 64.4(c)(1), the testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant-specific emission unit. The opacity indicator level shall be established at a level that provides reasonable assurance that particulate emissions are in compliance when opacity is equal to or less than the indicator level.

EKPC will monitor COM readings and record the pressure drop across the baghouse once per shift. If any 6-minute COM average opacity over a 3 hour-period (which is the averaging time for the PM limit) exceeds the opacity indicator level, EKPC will initiate an inspection of the fabric filter and/or COM and make any necessary repairs. EKPC may conduct a Method 9 or alternatively, accept the accuracy of the COM reading. If 5 % of COM data for a calendar quarter show excursions above the indicator level, a stack test will be performed during the next quarter unless waived by the Division. Pursuant to the CAM plan for this unit, if the pressure drop across the baghouse is determined to be outside normal ranges, corrective action will be initiated.

Pursuant to 401 KAR 59:016, Section 4(1) and 401 KAR 51:017, sulfur dioxide emissions shall not exceed 0.20 lbs/mmBtu based on a twenty-four (24) hour block average. Compliance with the twenty-four (24) hour average shall constitute compliance with the thirty (30) day rolling average contained in 401 KAR 59:016. Pursuant to 59:016 Section 7 and 40 CFR Part 75, a continuous emission monitoring system for sulfur dioxide is required. As the unit's uncontrolled sulfur dioxide emissions would qualify it as a major source, it has a sulfur dioxide emission limit, and it has a sulfur dioxide control device, 40 CFR Part 64 applies to sulfur dioxide. As a sulfur dioxide CEMS is

required, 40 CFR 64.3(d) requires that CEMS be used to satisfy CAM requirements as well.

Pursuant to 401 KAR 51:017, carbon monoxide emissions shall not exceed 0.15 lbs/mmBtu based on a thirty (30) day rolling average.

Pursuant to 401 KAR 51:017, nitrogen oxides (NO_x) emissions shall not exceed 0.07 lbs/mmBtu based on a thirty (30) day rolling average. The NO_x emission limit is waived for the specific SNCR optimization study activity as detailed in Section D (8 and 9). Should the optimization study prove that 0.07 lbs/mmBtu is unachievable, a significant permit revision shall be made to raise the allowable NO_x emission rate to the level demonstrated to be achievable during the optimization study, not to exceed 0.10 lb/mmBtu. Pursuant to 401 KAR 59:016 Section 7 and 40 CFR Part 75 continuous emission monitoring (CEMS) is required for the NO_x. As the unit's uncontrolled NO_x emissions would qualify it as a major source, it has a NO_x emission limit, and it uses a NO_x control device, 40 CFR Part 64 applies to NO_x for this unit. As a NO_x CEMS is required, 40 CFR 64.3(d) requires that CEMS be used to satisfy CAM requirements as well.

Pursuant to 401 KAR 51:017, VOC emissions shall not exceed 0.0036 lbs/mmBtu based on a thirty (30) day rolling average.

Pursuant to 401 KAR 51:017, mercury emissions shall not exceed 0.00000265 lbs/mmBtu based on a quarterly average.

Pursuant to 401 KAR 51:017, fluoride emissions shall not exceed 0.0000466 lbs/mmBtu based on a thirty (30) day rolling average.

Pursuant to 401 KAR 51:017, lead emissions shall not exceed 0.0000063 lbs/mmBtu based on a quarterly average.

Pursuant to 401 KAR 51:017, beryllium emissions shall not exceed 0.0000146 lbs/mmBtu based on a quarterly average.

Pursuant to 401 KAR 51:017, sulfuric acid mist emissions shall not exceed 0.005 lbs/mmBtu based on a thirty (30) day average.

Pursuant to 401 KAR 59:016, Section 6(3), particulate matter and nitrogen oxides emission standards apply at all times except during periods of startup, shutdown, or malfunction. The sulfur dioxide emission standard under Section 4 applies at all times except during periods of startup, shutdown, or malfunction.

Pursuant to 401 KAR 52:020, Section 10, the permittee shall monitor and record the Tire-Derived fuel tonnage and the 10% TDF-to-coal ratio on a monthly basis.

Case-by-Case MACT

Pursuant to 40 CFR 63.43(g)(2)(ii), case-by-case MACT determination, the permittee shall demonstrate compliance with the applicable emissions limitations for the following HAPs:

HAP	Emission Limitation lb/mmBtu	Compliance Method
VOC (VOC HAPs)	0.0036	Method 25A
Mercury	0.00000265	Method 29
Hydrogen Chloride	0.0035	Method 26A
Hydrogen Fluoride	0.00047	Method 26A
Beryllium	0.0000146	Method 29
Lead	0.0000063	Method 29
Metal HAPs (as PM)	0.015	Method 5

Pursuant to 40 CFR 63.43 case-by case MACT determination, and 401 KAR 52:020, Section 10, the permittee shall demonstrate compliance with these emissions limitations utilizing composite grab samples of the fuel “as fired” and analyze it to determine the HAP content in the fuel. This information shall be used to establish a correlation between the sampled HAP content and HAP emissions for monitoring purposes. The permittee shall demonstrate compliance with these emission limits each year to validate the correlation between grab samples HAP content and HAP emissions.

Pursuant to 40 CFR 63.43 (g)(2)(ii), case-by-case MACT determination, the permittee shall conduct the following monitoring to assure compliance with the applicable requirements:

HAP	Emission Limitation lb/mmBtu	Monitoring Method
VOC (VOC HAPs)	0.0036	The continuous compliance monitoring method used to assess compliance with the carbon monoxide emission limitation shall be used as an indicator of good combustion practices. Compliance with the carbon monoxide emission limitation assures compliance with the VOC (VOC HAP) emission limit.
Hydrogen Chloride	0.0035	The continuous compliance monitoring method used to assess compliance with the sulfur dioxide emission limitations shall be used to assure compliance with the hydrogen chloride emission limit. Compliance with the sulfur dioxide emission limitations assures compliance with the hydrogen chloride emissions limit.

Mercury	2.65×10^{-6}	<p>The permittee shall take a sample of fuel “as fired” to the boiler on a quarterly basis. The samples taken on a quarterly basis shall be analyzed to determine mercury content. Emissions shall be estimated based on the emission correlation established during the most recent stack test.</p> <p>The continuous compliance monitoring method used to assess compliance with the carbon monoxide emission limitation shall be used as an indicator of good combustion practices. The continuous compliance monitoring method used to assess compliance with the sulfur dioxide emission limitations shall also be used as an indicator of proper dry lime scrubber operational procedures. Compliance with the carbon monoxide and sulfur dioxide emission limitations assures compliance with the mercury emission limit.</p>
Hydrogen Fluoride	4.7×10^{-4}	<p>The continuous compliance monitoring method used to assess compliance with the sulfur dioxide emission limitations shall be used to assure compliance with the hydrogen fluoride emission limit. Compliance with the sulfur dioxide emission limitations assures compliance with the hydrogen fluoride emissions limit.</p>
Beryllium	146×10^{-6}	<p>The permittee shall take a sample of fuel “as fired” to the coal-fired boiler on a quarterly basis. The samples taken on a quarterly basis shall be analyzed to determine beryllium. Emission shall be estimated based on the emission correlation established during the most recent stack test.</p> <p>The continuous compliance monitoring method used to assess compliance with the PM emission limitations shall be used to assure compliance with the beryllium emission limit as an indicator of proper operation and removal of beryllium from the exhaust stream.</p>
Lead	6.3×10^{-6}	Same as beryllium
Metal HAPs	0.015	<p>The continuous compliance monitoring method used to assess compliance with the PM emission limitations shall be used to assure compliance with the metal HAPs emission limit as an indicator of proper operation and removal of metal HAPs from the exhaust stream. Compliance with the PM emission limitation assures compliance with the metal HAPs emissions limit.</p>

Compliance with the opacity limitation assures proper operation of the baghouse.

Emission Unit 04:

Coal Handling Operations: installed 1970

Two (2) Transfer towers, two (2) reclaim hoppers, eleven (11) conveyor drop points, and two (2) crusher houses, commenced construction in 1981.

Operating rate: 4,000 tons/hr

Regulations applicable to the unit:

401 KAR 60:005(ff), incorporating by Reference 40 CFR 60, Subpart Y, Standard of performance for coal preparation plant.

Pursuant to 401 KAR 60:005(ff), the owner or operator subject to the provisions of this regulation shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal, gases which exhibit twenty (20) percent opacity or greater.

Pursuant to 401 KAR 60:005(ff), EPA Reference Method 9 and the procedures in 40 CFR 60.11 shall be used to determine opacity at least annually.

The permittee shall perform a qualitative visual observation of the opacity of emissions from control equipment on a daily basis and maintain a log of the observations. If visible emissions from any control equipment are seen, the permittee shall determine the opacity of emissions by Reference Method 9, initiate an inspection of the control equipment, and make any necessary repairs.

Emission Unit 06:

Two fly ash silos (Truck load out), installed 1993

The maximum loading rate: 120 tons/hr, and

Emission Unit 07:

Coal Handling Operations, installed 1969

Rotary railcar unloader, barge unloader, sampling tower, radial stacker off-loading onto coal pile, haul roads, and yard area.

Regulations applicable to the units:

401 KAR 63:010, Fugitive emissions is applicable to each affected facility which emits or may emit fugitive emissions and is not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.

Pursuant to 401 KAR 63:010, Section 3, reasonable precautions shall be taken to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following:

- a. Application and maintenance of asphalt, application of water, or suitable chemicals on roads, material stockpiles, and other surfaces which can create airborne dusts;
- b. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials, or the use of water sprays or other measures to suppress the dust emissions during handling.
- c. Maintenance of paved roadways in a clean condition;

- d. The prompt removal of earth or other material from a paved street which earth or other material has been transported thereto by trucking or other earth moving equipment or erosion by water;
- e. Installation and use of compaction or other measures to suppress the dust emissions during handling.

Pursuant to 401 KAR 63:010, Section 3, discharge of visible fugitive dust emissions beyond the property line is prohibited.

For coal unloading, dumper, crushing operations, and conveying, the permittee shall assure compliance with 401 KAR 63:010 by using the control measures documented in the permit and/or required by regulation.

Emission Unit 09:

750 tons/hr Coal Storage Pile commenced February 2002

Equipped with wet suppression, telescopic chute, or dust suppressant system

Regulations applicable to the unit:

401 KAR 51:017, Prevention of significant deterioration of air quality applicable to major construction or modification commenced after September 22, 1982.

401 KAR 63:010, Fugitive emissions is applicable to each affected facility which emits or may emit fugitive emissions and is not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.

Pursuant to 401 KAR 63:010, Section 3, reasonable precautions shall be taken to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following:

- a. Application and maintenance of asphalt, application of water, or suitable chemicals on roads, material stockpiles, and other surfaces which can create airborne dusts;
- b. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials, or the use of water sprays or other measures to suppress the dust emissions during handling.
- c. Maintenance of paved roadways in a clean condition;
- d. The prompt removal of earth or other material from a paved street which earth or other material has been transported thereto by trucking or other earth moving equipment or erosion by water;
- e. Installation and use of compaction or other measures to suppress the dust emissions during handling.

Pursuant to 401 KAR 63:010, Section 3, discharge of visible fugitive dust emissions beyond the property line is prohibited.

For coal unloading, dumper, crushing operations, and conveying, the permittee shall assure compliance with 401 KAR 63:010 by using the control measures documented in the permit and/or required by regulation.

Emission Unit 10:

Coal Silos (4) with Baghouse: installed June 2002
Operating rate: 750 tons/hr.

Regulations applicable to the unit:

401 KAR 60:005(ff), which incorporates by reference 40 CFR 60 Subpart Y, Standards of Performance for Coal Preparation Plants.

401 KAR 51:017, Prevention of significant deterioration of air quality applicable to major construction or modification commenced after September 22, 1982.

Pursuant to 401 KAR 51:017, the Permittee shall install control methods selected as BACT.

Pursuant to 401 KAR 51:017, the baghouse utilized shall exhibit a design control efficiency of at least 99 %.

Pursuant to 401 KAR 60:005(ff), the owner or operator subject to the provisions of this regulation shall not cause to be discharged into the atmosphere from any coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal, gases which exhibit twenty (20) percent opacity or greater.

Pursuant to 401 KAR 60:005(ff), EPA Reference Method 9 and the procedures in 40 CFR 60.11 shall be used to determine opacity at least annually.

The permittee shall perform a qualitative visual observation of the opacity of emissions from control equipment on a weekly basis and maintain a log of the observations for Coal Silo operation. If visible emissions from any control equipment are seen, the permittee shall determine the opacity of emissions by Reference Method 9, initiate an inspection of the control equipment, and make any necessary repairs. This methodology may be used to assure compliance with the emission limitation.

Emission Unit 11:

Bed Ash Handling (Machine Point 01) System with Baghouse, commenced Feb.
2002
Operating Rate: 44 tons/hr

Emission Unit 12:

Fly Ash Silo (Machine Point 01) with baghouse, commenced Feb. 2002
Operating Rate: 71 tons/hour

Regulations applicable to the units:

401 KAR 51:017, Prevention of significant deterioration of air quality applicable to major construction or modification commenced after September 22, 1982.

401 KAR 59:010, New Process Operations

Pursuant to 401 KAR 51:017, the permittee shall install control equipment selected as BACT. Pursuant to 401 KAR 51:017 and 401 KAR 59:010, the permittee shall not cause to be discharged into the atmosphere from the above mentioned emission units gases which exhibit twenty (20) percent opacity or greater. Pursuant to 401 KAR 51:017, the baghouse utilized shall exhibit a design control efficiency of at least 99 %.

Pursuant to 401 KAR 59:010, particulate matter emissions shall not exceed 37.5 lbs/hr based on a three-hour average.

The permittee shall perform a qualitative visual observation of the opacity of emissions from each stack on a weekly basis and maintain a log of the observations. If visible emissions from any stack are seen, then the permittee shall determine the opacity of emissions by Reference Method 9 and perform an inspection of the control equipment for any necessary repairs. The pressure drop across baghouses will be checked and recorded on a continuous basis and compared with the manufacturer's specified operating range to ensure compliance.

Emission Unit 13:

Limestone Prep System with baghouse and enclosure, commenced Feb. 2002
Machine Point 01 – Limestone Thermal Drying
Machine Point 02 – Crushing
Operating Rate: 30 tons/hour

Emission Unit 14:

Limestone Storage Silo (Machine point 01) With baghouse commenced Feb. 2002
Operating Rate: 30 tons/hour

Regulations applicable to the units:

401 KAR 60:670, incorporating by reference 40 CFR 60 Subpart OOO, Standards of Performance for Nonmetallic Mineral Processing, as modified by Section 3 of 401 KAR 60:670.

401 KAR 51:017, Prevention of significant deterioration of air quality applicable to major construction or modification commenced after September 22, 1982.

Pursuant to 401 KAR 51:017, the Permittee shall install control equipment selected as BACT.

Pursuant to 401 KAR 51:017, emissions of particulate shall be controlled by a baghouse with a design control efficiency of at least 99 %. Pursuant to 401 KAR 60:670, emissions of particulate shall not exceed 0.05 gr/dscm and shall not exhibit greater than 7% opacity.

The permittee shall perform a qualitative visual observation of the opacity of emissions from each stack on a weekly basis and maintain a log of the observations. If visible emissions from any stack are seen, then the permittee shall determine the opacity of emissions by Reference Method 9 and perform an inspection of the control equipment for any necessary repairs. The pressure drop across baghouses will be checked and recorded on a continuous basis and compared with the manufacturer's specified operating range to ensure compliance.

Emission Unit 15:

Limestone Unloading (Truck Dump) with Dust Suppressant: commenced Feb. 2002
Operating Rate: 30 tons/hour

Regulations applicable to the unit:

401 KAR 51:017, Prevention of significant deterioration of air quality applicable to major construction or modification commenced after September 22, 1982.

401 KAR 63:010, Fugitive emissions is applicable to each affected facility which emits or may emit fugitive emissions and is not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.

Pursuant to 401 KAR 63:010, Section 3, reasonable precautions shall be taken to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following:

- a. Application and maintenance of asphalt, application of water, or suitable chemicals on roads, material stockpiles, and other surfaces, which can create airborne dusts;
- b. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials, or the use of water sprays or other measures to suppress the dust emissions during handling.
- c. Maintenance of paved roadways in a clean condition;
- d. The prompt removal of earth or other material from a paved street which earth or other material has been transported thereto by trucking or other earth moving equipment or erosion by water;
- e. Installation and use of compaction or other measures to suppress the dust emissions during handling.

Pursuant to 401 KAR 63:010, Section 3, discharge of visible fugitive dust emissions beyond the property line is prohibited.

For coal unloading, dumper, crushing operations, and conveying, the permittee shall assure compliance with 401 KAR 63:010 by using the control measures documented in the permit and/or required by regulation.

Emission Unit 16:

Cooling Tower with 0.005% Drift Eliminators, commenced Feb. 2002
Operating Rate: 2600 GPM

Regulations applicable to the emission unit:

40 CFR 63, Subpart Q, National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers.

401 KAR 63:010, Fugitive emissions is applicable to each affected facility which emits or may emit fugitive emissions and is not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.

401 KAR 51:017, Prevention of significant deterioration of air quality applicable to major construction or modification commenced after September 22, 1982.

Pursuant to 40 CFR 63, Subpart Q, the permittee shall not use any chromium-based water treatment chemicals in the cooling tower. The cooling tower shall utilize 0.005% drift eliminators. The permittee shall maintain the records of manufacturer's design of the drift eliminators. The drift eliminators shall be operated in accordance with manufacturer's specifications and/or standard operating practices.

Pursuant to 401 KAR 63:010, Section 3, reasonable precautions shall be taken to prevent particulate matter from becoming airborne. Such reasonable precautions shall include, when applicable, but not be limited to the following:

- a. Application and maintenance of asphalt, application of water, or suitable chemicals on roads, material stockpiles, and other surfaces, which can create airborne dusts;
- b. Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials, or the use of water sprays or other measures to suppress the dust emissions during handling.
- c. Maintenance of paved roadways in a clean condition;
- d. The prompt removal of earth or other material from a paved street which earth or other material has been transported thereto by trucking or other earth moving equipment or erosion by water;
- e. Installation and use of compaction or other measures to suppress the dust emissions during handling.

Pursuant to 401 KAR 63:010, Section 3, discharge of visible fugitive dust emissions beyond the property line is prohibited.

SIGNIFICANT MODIFICATION FOR INSTALLATION OF NEW CFB BOILER EMISSION UNIT 17 (BOILER #04):

Applicable Regulations:

401 KAR 51:017, Prevention of Significant Deterioration of Air Quality applicable to major construction or modification commenced after September 22, 1982;

401 KAR 51:160, NO_x requirements for large utility and industrial boilers; incorporating by reference 40 CFR 96;

401 KAR 52:060, Acid rain permits, incorporating by reference the Federal Acid Rain provisions as codified in 40 CFR Parts 72 to 78;

401 KAR 60:005, incorporating by reference 40 CFR 60, Subpart Da, Standards of Performance for Electric Utility Steam Generating Units applicable to an emission unit with a capacity of more than 250 mmBtu per hour and commenced construction on or after September 19, 1978;

401 KAR 63:020, Potentially Hazardous Matter or Toxic Substances;

40 CFR 64, Compliance Assurance Monitoring;

40 CFR 75, Continuous Emission Monitoring;

State Only Enforceable Applicable Regulations:

401 KAR 59:016, New Electric Utility Steam Generating Units

Emission Analysis

The new CFB boiler (Emission Unit 17) is equipped with Selective Non Catalytic Reduction (SNCR), Pulse Jet Fabric Filters (PJFF), Dry scrubbing (DS), and a Limestone Injection System. In addition, a new coal blending system and associated material handling equipment, a new natural draft cooling tower, increased utilization of existing material handling equipment, increased utilization of the existing fuel oil storage tanks, and an ash barge loading system/fly ash silos are included with the project. Detailed descriptions of the plant processes and expected emissions at each emission point and emission unit are contained in the air permit application document. The project's annual emissions increases for NSR-regulated pollutants, as shown below in Table 3-1, are calculated for anticipated conditions while operating at 100% load.

**TABLE 3.1 – Net Emission Increase for
PSD-Regulated Pollutants**

Pollutants	Net Emission Increase (tpy)
Carbon Monoxide (CO)	1840
Nitrogen Oxides (NO _x)	1226.4
Particulate Matter (PM/PM ₁₀)	184
Sulfur Dioxide (SO ₂)	2208
Volatile Organic Compounds (VOC)	44
Sulfuric Acid (H ₂ SO ₄) Mist	61.32
Fluorides	0.57
Lead (Pb)	0.07
Total Reduced Sulfur	Negligible
Reduced Sulfur Compounds	Negligible
Hydrogen Sulfide	Negligible

REGULATORY REVIEW

This section presents a discussion of the air quality regulations applicable to this project in addition to the PSD requirements. In some cases the emission limit or technology standard based on these regulations may be superseded by the BACT requirements, which are more stringent under PSD (see Section 5, Best Available Control Technology Review). The following regulations apply to the proposed project

New Source Performance Standards (NSPS)

The Clean Air Act (CAA) directed U.S. EPA to establish New Source Performance Standards, or NSPS, for specific industrial categories. There are five NSPS requirements applicable to the proposed project.

New Source Performance Standards for Steam Electric Generating Units

40 CFR Part 60, Subpart Da requires all new, modified, or reconstructed steam generating units with a maximum heat input capacity greater than 250 mmBtu/hour for which construction is commenced after September 18, 1978 (44 FR 33613, June 11, 1979) to meet limitations on emissions of PM, SO₂, and NO_x. In 1998, U.S. EPA revised Subpart Da for new electric utility steam generating units (63 FR 49442, September 16, 1998). The revisions reduced the numerical NO_x emission limits for utility steam generating units for which construction commenced after July 9, 1997. The revisions established a NO_x emission limit of 1.0 lb/megawatt-hour gross energy output (lb/MWh), based on a 30-day rolling average. The new CFB boiler will be subject to Subpart Da. Subpart Da is incorporated by reference in 401 KAR 60:005 Section 3(1)(c).

On February 27, 2006, U.S. EPA revised NO_x, SO₂ and PM emission limits under 40 CFR Part 60, Subpart Da, for all new, modified, or reconstructed steam generating units with a maximum heat input capacity greater than 250 mmBtu/hour for which construction is commenced after February 28, 2005. (70 FR 9706, February 28, 2005). The BACT emission limits included in this permit for Unit 17 are lower than the revised NSPS emission limits proposed by U.S. EPA for NO_x and SO₂ emissions. This permit has a proposed BACT PM emission limit of 0.012 lb/mmBtu (filterable and condensable), which is lower than the revised NSPS PM limit proposed of 0.015 lb/mmBtu for PM (filterable). This permit proposes an emission limit of 0.009 lb/mmBtu (filterable) on a 30 day rolling average and 0.012 lb/mmBtu for PM 10(filterable and condensable) based on a 3-hour performance test for the new unit. The proposed NSPS limits are included in the permit. In the event that the final NSPS is changed, then this permit will be reopened pursuant to the requirement of 401 KAR 52:020 and appropriate changes will be made.

On May 18, 2005, U.S. EPA published in the Federal Register the Clean Air Mercury Rule (CAMR) establishing new mercury emission limits under 40 CFR Part 60, Subpart Da, for all new, modified, or reconstructed steam generating units with a maximum heat input capacity greater than 250 mmBtu/hour for which construction is commenced after January 30, 2004 (70 FR 28606). Unit 17 will meet the mercury requirements of 40 CFR 60 Subpart Da. The CAMR also adds new requirements in 40 CFR Part 60, Subpart HHHH, which establishes a nation-wide cap on mercury emissions from utility units. Emission Unit 17 will be subject to Subpart HHHH at the time the state adopts this rule into its State Implementation Plan.

New Source Performance Standards for Coal Preparation Plants

40 CFR Part 60, Subpart Y, Standards of Performance for Coal Preparation Plants, incorporated by reference in 401 KAR 60:005 Section 3(1)(ff), requires certain coal processing facilities to comply with certain particulate standards. Activities regulated by this NSPS include crushing, screening, conveying and transferring of coal. Emission points are subject to an opacity limitation of 20 percent (%). The proposed BACT emission limits for coal processing activities subject to Subpart Y will meet all NSPS requirements.

New Source Performance Standards for Non-Metallic Mineral Processing Plants

40 CFR Part 60, Subpart OOO, Standards of Performance for Non-Metallic Processing Plants, incorporated by reference in 401 KAR 60:670, regulates particulate emissions from crushing, screening, milling, transferring and truck unloading of non-metallic minerals. Operations enclosed in buildings are allowed zero fugitive emissions. Emissions vented through a stack are limited to 7% opacity and 0.05 grains per dry cubic meter (gr/dcm). Conveyors and transfer points are allowed 10% fugitive visible emissions, while crushing operations are allowed 15% opacity if a capture system is not used. Trucks unloading into screening operations, hoppers or crushers are exempt from the NSPS Subpart OOO standard, but are subject to the requirements of 401 KAR 63:010 (discussed below). The proposed BACT emission limits for non-metallic mineral processing activities subject to Subpart OOO will meet these NSPS requirements.

SIP REQUIREMENTS

The Commonwealth of Kentucky has developed specific new source standards in 401 KAR 59:016 for new electric utility steam generating units. 401 KAR 59:016 standards apply to each electric utility steam-generating unit built after September 19, 1978, that is capable of combusting more than 250 mmBtu/hr heat input of fossil fuel. Additionally, Kentucky has developed new source standards in 401 KAR 59:015 which apply to indirect heat exchangers built after the classification dates and that are capable of a heat input capacity greater than 1 mmBtu/hr. 401 KAR 59:015 does not apply to units that are subject to the requirements of 401 KAR 59:016. Kentucky's emission standards parallel the Federal NSPS standards; therefore, the proposed facility will also be in compliance with Kentucky's emission standards if it is in compliance with NSPS standards.

401 KAR 63:010 applies to fugitive dust emissions from roads and material handling operations. The regulation requires the owner or operator to utilize reasonable precautions to prevent particulate matter from becoming airborne and prohibits visible fugitive dust at the property line. EKPC has proposed controls on such operations such as watering, paving roads, and covering or enclosing operations, to ensure compliance with this regulation.

401 KAR 63:020 applies to certain facilities that emit potentially hazardous matter or toxic substances that are not elsewhere subject to regulation. The same control technologies and emission

limitations that are applied for PM, SO₂, CO, VOC and fluorides control ensure that the proposed facilities will not emit potentially hazardous matter or toxic substances, including products of coal combustion such as non-mercury metallic substances, acid gases, and hazardous organic substances, in violation of 401 KAR 63:020, and that such matter and substances will be controlled to levels that are not deemed to threaten health or welfare. These controls ensure that the facilities are operated using the utmost care and consideration, as demonstrated by acceptance of PM and mercury emission limits that meet or exceed the newly promulgated and proposed U.S. EPA performance standards.

NO_x SIP CALL

40 CFR Part 96 requires Electric Generating Units (EGUs) to comply with NO_x emissions limitations during the ozone season (May through September). Emission Unit 17 will be an EGU and will meet all applicable emission limitations as specified in the NO_x SIP Call regulations (401 KAR 51:160 and 401 KAR 51:190) that have incorporated by reference the requirements of 40 CFR Part 96.

PHASE II ACID RAIN PERMITS

Title IV of the CAA requires reductions in emissions of SO₂ and NO_x in an effort to reduce formation of acid rain. U.S. EPA, in promulgating regulations in 40 CFR Part 72, incorporated by reference in 401 KAR 52:060, requires the submittal of application forms no later than two years prior to commencing operations of a regulated unit. EKPC is required to apply for a Phase II Acid Rain permit for Emission Unit 17. Under Phase II Acid Rain requirements, filing of a Title V application for a new source subject to the Acid Rain requirements requires the source to file the Phase II application at the same time. Additionally, Part 75 requires continuous emission monitoring for NO_x and SO₂. Proposed emission limits for NO_x and SO₂ are lower than Title IV Acid Rain requirements. Therefore, Title IV requirements will be met.

COMPLIANCE ASSURANCE MONITORING

Emissions of H₂SO₄ mist from Emission Unit 17 are subject to the compliance assurance monitoring (CAM) requirements of 40 CFR Part 64. Pursuant to 40 CFR 64.2, CAM applies on a pollutant-by-pollutant basis at emission units at Title V major sources provided the unit is subject to an emission limitation or standard in an applicable requirement, the unit uses a control device to achieve compliance, the unit has a pre-control potential to emit the pollutant of greater than major source thresholds, and the emission limitation or standard is not exempt from the requirements of Part 64. Pre-control emissions of SO₂, NO_x, PM/PM₁₀, and H₂SO₄ mist are each greater than 100 tpy. CAM requirements under 40 CFR 64.2(b) will be met for SO₂, NO_x, and PM/PM₁₀, by using continuous emission monitors.

TABLE – CAM Plan for H₂SO₄ Mist

Applicable CAM Requirement	H ₂ SO ₄ Mist
General Requirements	0.005 lb/mmBtu 3 hour rolling average
Monitoring Methods and Location	SO ₂ CEMS plus initial source test. Monitor rate of Limestone Injection in conjunction with initial source tests to establish excursion and exceedance.
Indicator Range	Initial source testing to establish correlation to SO ₂ and limestone injection rate to Sulfuric Acid Mist emissions
Data Collection Frequency	Continuous SO ₂ CEM and limestone injection rate
Averaging Period	3 hour rolling
Recordkeeping	CEM data system , limestone injection
QA/QC	DS/Limestone injection rates will be maintained and operated in accordance with manufacturer specifications and recommendations

The use of a CEM that provides results in units of the appropriate standard for the pollutant of interest and meets the regulated in 40 CFR 64.3(d)(2) is considered presumptively acceptable CAM.

ADDITIONAL MONITORING AND TESTING REQUIREMENTS

The owner is required to conduct a performance test within 60 days after achieving the steady-state maximum production rate at which the affected facilities will be operated but not later than 180 days after initial start-up of such facilities.

Under 40 CFR Part 60, Subpart Da, Emission Unit 17 is required to be performance tested for particulate matter, sulfur dioxide and nitrogen oxides. 40 CFR Part 60, Subpart Da, refers to 40 CFR 60.8 for testing requirements. As provided in 40 CFR 60.8, EKPC shall perform an initial compliance test for particulate matter, sulfur dioxide and nitrogen oxides per 40 CFR Part 60, Appendix A. Emission Unit 17 shall have CEMS for PM, SO₂, NO_x, CO, Hg, and diluent gases oxygen or carbon dioxide (CO₂), and a continuous opacity monitor (COM) for opacity monitoring. Compliance with 40 CFR Part 75 will constitute compliance for the appropriate monitoring, testing, reporting, and record keeping requirements of 40 CFR Part 60, Subpart Da.

PSD REQUIREMENTS

As stated earlier, 401 KAR 51:017, Prevention of Significant Deterioration (PSD) of air quality applies to the proposed project. The project will be located in Mason County, which is designated as “attainment” or “unclassified” for all ambient air quality standards. The project potential to emit (PTE) for all pollutants that trigger PSD review are listed in Table 4.2.

TABLE 4.2 – Project Potential to Emit for Pollutants Requiring PSD Review

Pollutant	PTE (tpy)	Significant Emission Rate * (tpy)
Carbon monoxide (CO)	1840	100
Particulate matter (PM/PM ₁₀)	184	25/10
Volatile organic compounds (VOC)	44	40
Nitrogen Oxides	1226.4	40
Sulfur dioxides	2208	40
Sulfuric Acid (H ₂ SO ₄) Mist	61.32	7

* Significant emission rate as given in 401 KAR 51:001 Section 1(221).

The proposed project constitutes a major modification for those pollutants listed in Table 4.2. PSD review applies to regulated pollutants for which there will be a net emissions increase that is significant as defined in 401 KAR 51:001, Section 1(221). For these pollutants, EKPC has performed a Best Available Control Technology (BACT) demonstration and an ambient air quality analysis as required by the Division. Each of these components of the PSD review process has been discussed in detail in the following sections. Pursuant to Section 112(b)(6) of the CAA and 401 KAR 51:001 Section (1)(210) and (1)(221), no HAP is subject to PSD review.

BEST AVAILABLE CONTROL TECHNOLOGY REVIEW

Pursuant to 401 KAR 51:017, Section 8, a major modification shall apply BACT:

1. For each regulated NSR pollutant that results in a significant net emissions increase at the source; and

2. For each proposed emission unit at which a net emissions increase in the pollutant occurs as a result of a physical change or change in the method of operation of the unit.

The proposed project will result in a significant net emissions increase for sulfuric acid mist, volatile organic compounds, carbon monoxide, nitrogen oxides, sulfur dioxide, and PM/PM₁₀. Therefore, each of these pollutants is subject to a BACT review. EKPC presented in the permit application, a study of the best available control technology for applicable pollutants and each proposed emission unit. The Division and Region 4 of the U. S. EPA have reviewed the proposed control technologies in conjunction with information available in the U.S. EPA's RACT/BACT/LAER Clearinghouse (RBLC) database and other similar sources. Numerous comments were generated during that review, and numerous pieces of additional information were received from EKPC in response to those questions and comments.

Considering all the information submitted, the Division has determined that, for Emission Unit 17 and all the other equipment involved in this project for which BACT must be determined, the technologies chosen by EKPC are the correct technologies. However, the Division disagrees with EKPC's proposed emission rate limits for all of the BACT pollutants emitted by Emission Unit 17 except for sulfuric acid mist. This is based on the Division's research and analysis of the selected technologies. The emission limits determined by the Division are included in the permit.

BACT FOR NEW CFB BOILER

The following section summarizes the BACT determinations for the new CFB boiler. The applicant selected various technologies for analysis of technical and practical feasibility, and then applied economic cost-effectiveness analyses where the top ranked technology was not selected. The following discussion from the application is provided below, and lists various technologies considered by the applicant in its BACT evaluation. A summary of the control technology determined to be BACT for each pollutant and each proposed emissions unit is presented in Table 5.1.

TABLE 5.1 – BACT Summary for New CFB Boiler (Emission Unit 17)

ID No.	Emission Unit/Process	Pollutant	Best Available Control Technology	Emission Standard
	Circulating Fluidized Bed Boiler Operation limitation: None	CO	Proper Boiler Design & Operation	0.1 lb/mmBtu (30 day basis) on 8-hour block average or 420 lb/hr –8-hr block average to meet NAAQS standards
		PM/PM ₁₀	PJFF (Filterable & (Condensable)	0.012 lb/mmBtu (Filterable & Condensable) (average of three 1-hour tests) on a 24-hour block average, with 0.009 lb/mmBtu (filterable) (30 day avg., PMCEM) or 84/lb/hr –30 days block average for filterable to meet NAAQS standards.
		VOCs	Proper Boiler Design & Operation	0.002 lb/mmBtu (3 hour average) or 6 lb/hr- 3hr block average to meet NAAQS
		Sulfur Dioxide	DS and Lime injection	0.15 lb/mmBtu (24 hour block average) or 504 lb/hr-24 hr block average to meet NAAQS
		Nitrogen Oxide	Proper Boiler Design & SNCR	0.07 lb/mmBtu (30 day block rolling average) or 280 lb/hr- 30 day block average to meet NAAQS
		Fluorides	DS and Lime injection	0.000046 lb/mmBtu (3 hour block rolling average) or 1.32 lb/hr –3 hr block average to meet the NAAQS
		Sulfuric Acid Mist	Proper Boiler Design & DS	0.005 lb/mmBtu (3 hour block rolling average) or 14 lb/hr-3 hr block average to meet the NAAQS

Nitrogen Oxide (NO_x)

BACT review for NO_x emission control is required for this project. The project is a major modification for NO_x since there will be a significant net increase of NO_x emissions. BACT is applicable; the applicant will utilize an SNCR in conjunction with low NO_x burners on Emission Unit 17 to reduce NO_x emissions. The Division is setting the NO_x emission limit at 0.07 lb/mmBtu heat input on a 30 day rolling average. In order to ensure the validity of the NAAQS and increment consumption modeling, nitrogen oxides emissions shall not exceed 280 lb/hr on a thirty (30) day block average. The Division will allow EKPC to perform a NO_x optimization study to determine how best to meet the 0.07 lb/mmBtu limit. If EKPC cannot meet that limit, they may request a significant permit revision for an increase up to but not above 0.09 lb/mmBtu.

Sulfur Dioxide (SO₂)

BACT review for SO₂ emissions control is required for this project. The project is a major modification for SO₂ since there will be a significant net increase of SO₂ emissions. Increased SO₂ removal using dry scrubbing with limestone injection on Emission Unit 17 will provide the necessary emission reductions. While the Division concurs with the applicant that a dry lime scrubber in conjunction with limestone injection is the appropriate technology for SO₂ control on Emission Unit 17, the Division does not agree with EKPC's proposal of 0.18 lb/mmBtu as the achievable emission rate, and is setting the SO₂ emission limitation at 0.15 lb/mmBtu heat input on a twenty four (24) hour block average. In order to ensure the validity of the NAAQS and increment consumption modeling, sulfur dioxide emissions shall not exceed 504 lb/hr based on a twenty-four (24) hour block average.

Carbon Monoxide (CO)

Based on the U.S. EPA BACT/RACT/LAER Clearinghouse for CFB boilers and other technical materials, BACT determinations specify the following: good combustion practice, good combustion control and operation, proper design, and, in some cases, no controls. Proper boiler design and operation is BACT for CO emissions. The applicant has precluded thermal and catalytic oxidation as possible BACT technologies as being technically infeasible for a CFB boiler. The Division concurs that proper boiler design and operation is BACT for CO emissions. The Division does not concur with the emission limitation proposed by the applicant and revised the limit to 0.10 lbs/mmBtu on a 30 day average. In order to ensure the validity of the NAAQS and increment consumption modeling, carbon monoxide emissions shall not exceed 420 lb/hr on an eight (8) hour block average.

Volatile Organic Compounds:

The Division concurs that proper boiler design and operation is BACT for VOC emissions. The Division does not concur with the emission limitation proposed by the applicant and revised the limit to 0.002 lb/mmBtu based on three (3) hour rolling average. In order to ensure the validity of the NAAQS and increment consumption modeling, volatile organic compound emissions shall not exceed 6 lb/hr on three (3) hour block average.

Particulate (PM/PM₁₀)

Particulate matter emissions from the new CFB boiler are primarily the result of formation of CaSO₄ and ash content and other contaminants in the fuel. There are several control technologies for removing particulates from a gas stream. A PJFF had the highest control efficiency of any of the particulate matter control options and was considered first.

PJFF:

PJFF, which is essentially a baghouse, is an effective particulate control device used for meeting particulate emission limits on many coal fired boilers. PJFFs use fabric bags as filters to collect filterable particulates. The particulate-laden flue gas enters a PJFF compartment and passes through the filter bags. The collected particulate forms a cake on the bag, which can enhance the bag's filtering efficiency. The pressure drop across the bags increases as the thickness of the dust cake increases. At a predetermined set point, the filtering bags are cleaned, dislodging a large portion of the dust cake. Mercury and SO₃ emissions come into contact with the collected ash, providing better control in the fabric filter baghouse systems as compared to an ESP.

The applicant has proposed a PJFF as BACT for PM/PM₁₀ (filterable & condensable). The Division has reviewed the U.S. EPA BACT/RACT/LAER Clearinghouse and other sources for other recently issued coal fired utility air construction permits and concurs that the proposed PJFF control technology for filterable and condensable particulates is BACT. Based on performance tests on Unit #3, the Division has determined that an appropriate BACT emission limit for the new CFB boiler is 0.012 lb/mmBtu (filterable and condensable) based on an average of three 1-hour tests, with a limit of 0.009 lb/mmBtu (monitored with a CEM) for PM/PM₁₀ on a thirty day (30) rolling average. In order to ensure the validity of the NAAQS and increment consumption modeling, PM₁₀ emissions shall not exceed 84 lb/hr on a twenty four-block average.

Sulfuric Acid (H₂SO₄) Mist

Sulfuric acid is present in the flue gases generated from combustion of coal because a fraction of the sulfur dioxide (SO₂) produced is further oxidized to sulfur trioxide (SO₃). SO₃ reacts with water in flue gas to form sulfuric acid vapor. Sulfuric acid can cause air heater fouling and equipment corrosion. When flue gas containing sulfuric acid vapor is cooled, sulfuric acid condenses to form a sub-micron aerosol mist that can form a visible plume.

The inclusion of PJFF for particulate control will provide some reduction of H₂SO₄ emissions since SO₃ will react with unreacted lime and limestone in the filter cake. Effective controls for H₂SO₄ include post-combustion controls. The Division concurs that a dry lime scrubber for a CFB is the top technology for an unsaturated exhaust stream. The applicant has proposed the use of good combustion controls, with a dry scrubber with lime injection capability as BACT to achieve 0.005 lb/mmBtu limit based on a 3-hour hour average. In order to ensure the validity of the Class I visibility modeling, Sulfuric acid mist emissions shall not exceed 14 lb/hr on a three (3) hour block average. The Division concurs that the proposed control technology and emission rate constitute BACT for the new CFB boiler.

Startup and Shutdown

The emission limitations identified above do not apply during periods of startup and shutdown of the new CFB boiler (Emission Unit 17). The BACT determinations and associated emissions levels discussed above were determined based on normal operating conditions that allow the use of pollution control technologies. Some of these control technologies cannot be used to their full or partial potential during startup or shutdown for safety and other reasons. Pursuant to 401 KAR 51:017, the owner or operator shall utilize good work and maintenance practices and manufacturer's recommendations to minimize emissions during, and the frequency and duration of, such startup and shutdown events. The Division concurs that these practices constitute BACT for startup and shutdown operations of the new CFB boiler.

PM/PM₁₀-MATERIAL HANDLING

Dust control will be achieved through enclosures or have wet spray dust suppression. The proposed BACT materials handling controls for other facilities or activities are summarized in the Table 5-2. Fly ash handling will be controlled with fabric filter.

MATERIAL HANDLING PROJECT EMISSION UNITS

The following table identifies emissions unit and control devices affected by the Project:

TABLE 5.2 – Project Emission Units

Emission Units		Air Pollution Control Devices	
ID. No.	Description	Efficiency	Description
18	Coal Pile	90%	Wet Suppression, and Telescopic chutes
19	Coal Silos	99%	Enclosure with Filtration
20	Bed Ash Silo	99%	Enclosure with Filtration
21	Fly Ash Silo	99%	Enclosure with Filtration
22	Limestone Silo	99%	Enclosure with Filtration

The units listed above are considered separate emission units because they are individual activities that emit or have the potential to emit regulated air pollutants. "Emission unit" is defined in 401 KAR 51.001 Section 1(66) as any part of a stationary source that emits or has the potential to emit any regulated NSR air pollutant. This term is not meant to alter or affect the definition of the term "unit" for purposes of Title IV of the Act [40 CFR 70.2]. However, similar emission units were combined in this permit into one emission unit ID to simplify the permit. These emissions units have the same applicable requirements.

COOLING TOWER-EMISSION UNIT 23

The permittee will be installing and operating a cooling tower with a feed rate of approximately 2,300 gallons per minute as part of the proposed new CFB boiler project. For BACT control of

PM10 emissions from this source, EKPC is proposing the use of a drift eliminator and a maximum drift rate of 0.005 percent as the BACT control methodology and emissions limit. Based on recent permitting actions, the Division does not concur and has established BACT for this emission unit as a drift eliminator with a maximum drift rate of 0.0005 percent.

MODELING METHODOLOGY

The application for the proposed source contains Calpuff/ISCST3 air dispersion modeling analysis for regulated and non-regulated pollutants (nitrogen oxides, PM/PM₁₀, sulfur dioxide, beryllium, sulfuric acid mist and carbon monoxide) to determine the maximum ambient concentrations attributable to the proposed plant for each of these pollutants for comparison with:

1. The significant impact levels (SIL) found in 40 CFR 51.165 (b)(2).
2. The Significant Air Quality Impact levels (SIA) found in 40 C.F.R. Part 51, Appendix W as referenced by 401 KAR 51:017, Section 24.
3. The PSD Class I and Class II increments found in 401 KAR 51:017, Section 2.
4. The National Ambient Air Quality Standards (NAAQS).

All applicable ambient air quality concentration values are presented in Table 6.1. Based on U.S. EPA procedures, if the maximum predicted impacts for any pollutant are found to be below the SILs then it is assumed that the proposed facility cannot cause or contribute to a violation of the PSD pollutant increments or the national ambient air quality standards (NAAQS). Therefore, no further modeling would be required for such a pollutant. The applicant may also be exempted from the ambient monitoring data requirements if the impacts are below the significant monitoring concentrations (SMC). The SMC levels determine if the applicant will be required to perform pre-construction monitoring. If the modeled impacts do not equal or exceed the SMC levels, pre-construction monitoring is not required. As shown in the application and supplemental information to the Division, the SMC levels were exceeded for the 3-hour, 24-hour, and annual modeled impacts.

The applicant requested that data from the monitors near EKPC's Spurlock site be accepted as representative of the area. The Division determined the location of the monitor, quality of the data, and the data's correctness all met the requirements listed in the NSR guidance manual.

TABLE 6.1 – Ambient Air Quality Concentration Values

Pollutant	Averaging Period	SIL ($\mu\text{g}/\text{m}^3$)	SMC ($\mu\text{g}/\text{m}^3$)	PSD Class II Increments ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
NO _x	Annual	1	14	25	100
PM ₁₀	Annual	1	NA	17	50
	24-hour	5	10	30	150
SO ₂	Annual	1	NA	20	80
	24-hour	5	13	91	365
	3-hour	25	NA	512	1300
CO	8-hour	500	575	NA	10000
	1-hour	2000	NA	NA	40000

With respect to the Class I modeling, the applicant used the CALPUFF model with refined inputs to better predict possible impacts for the particular region in question. Detailed documentation of the modeling inputs and the techniques used are provided in Appendix D of the supplemental information provided to the Division on August 24, 2005.

Regional surface air data were obtained and compiled from National Weather Service (NWS) stations at Huntington West Virginia, Covington Kentucky, Jackson Kentucky; Lexington Kentucky, Louisville Kentucky, Paducah Kentucky, and Nashville Tennessee, respectively, from 1990, 1992 and 1996. As specified by the National Park Service (NPS), the permittee considered three years of prognostic meteorological data, using the Penn State/NCAR Mesoscale Model (MM) Versions 4 and 5, extracting data from 1990 MM4, 1992 MM5 and 1996 MM5 data with the concurrent National weather service surface and upper air data.

MODELING RESULTS - CLASS II AREA IMPACTS

The proposed facility will be located in Mason County, a Class II area. The applicant modeled the impact of the emissions from the proposed facilities on the ambient air quality and the results of the modeled impacts on the Class II area have been presented in Table 6.2.

The modeling results show that the maximum impacts from the proposed facility for PM/PM₁₀, NO_x, and CO are less than the EPA prescribed significant ambient impact levels (SIL) and no further analysis are required. However, the 3-hour, 24-hour, and annual sulfur dioxide impacts all exceeded the prescribed SILs. Therefore, the permittee agreed to take a voluntary reduction in the SO₂ allowable emission rate for Emission Unit One from the current level of 6 lb/mmBtu to 3 lb/mmBtu. Refined modeling was performed as detailed in supplemental information submitted to the Division on August 24, 2005 and January 20, 2006 (see attached).

TABLE 6.2 – Applicants Modeled Predicted Impacts

Pollutant	Averaging Period	SIL ($\mu\text{g}/\text{m}^3$)	SMC ($\mu\text{g}/\text{m}^3$)	Max Impact of Emission ($\mu\text{g}/\text{m}^3$)	SIA (km)	Preconstruction Monitoring Required
NO ₂	Annual	1	14	0		No
PM ₁₀	Annual	1	NA	3.14	2.5	No
	24-hour	5	10	8.86		No
SO ₂	Annual	1	NA	0.99	50	No
	24-hour	5	13	4.99		No
	3-hour	25	NA	24.99		No
CO	8-hour	500	575	39.12		No
	1-hour	2000	NA	168.94		No
Beryllium	24-hour	NA	0.001	0.00088		No

Pollutant	Averaging Period	Class II PSD Increment ($\mu\text{g}/\text{m}^3$)	Applicant's Class II Increment Consumption³ ($\mu\text{g}/\text{m}^3$)
PM ₁₀	Annual ¹ 24-hour	17 30	3.14 17.38
SO ₂	Annual ¹ 24-hour 3-hour	20 91 512	5.71 39.57 184.45
NO _x	Annual ²	25	0

1. Annual geometric mean;

2. Annual arithmetic mean;

3. Increment consumption based on high-second-high

MODELING RESULTS - CLASS I AREA IMPACTS

The federally designated Class I area nearest to the project site is Mammoth Cave National Park. The nearest park boundary is approximately 250 km to the Southwest of the proposed facility. At the request of the FLM and the Division, the applicant used the CALPUFF model to analyze the effects of the new project. Results of this modeling were presented in supplemental information submitted to the Division. Table 6.4 lists the modeled increment consumption for the proposed source and illustrates that no Class I increments will be exceeded. Additional information regarding the Class I modeling is presented in Appendix D of the supplemental information received on August 24, 2005.

Table 6.4 – Modeled Class I increment Consumption

Pollutant	Averaging Period	Class I Increment ($\mu\text{g}/\text{m}^3$)	Source Class I Increment Consumption ($\mu\text{g}/\text{m}^3$)
NO _x	Annual	2.5	0.00046
PM ₁₀	Annual 24-hour	4 8	0.0011 0.0051
SO ₂	Annual 24-hour 3-hour	2 25 5	0.0047 0.28 0.84

Although there are no predicted exceedances of Class I increments at the park, the FLM expressed concerns regarding the possible change in visibility that may result from the project emissions. Modeling shows that there are a few days that slightly exceed the 5% visibility change, and zero days exceeding a 10% change (those values are set as screening values for Class I area visibility impact). However, regulation 401 KAR 51:017 allows for a case-by-case determination of what potential impacts are acceptable. After consultation with the Federal Land Manager, the Division has determined that the proposed project has an acceptable impact on visibility in all Class I areas.

MODELING RESULTS - FLOURIDE

The Commonwealth of Kentucky has an ambient air quality standard for gaseous fluorides (see Appendix A to 401 KAR 53:010). In response to an U.S EPA comments, EKPC conducted modeling to verify fluoride emissions would not cause or contribute to an exceedance of that standard. The modeling results indicated that to be the case.

IMPACTS ON NEARBY NONATTAINMENT AREAS

U.S. EPA Region 4, requested that EKPC provided a qualitative or quantitative assessment of whether emissions from Spurlock Unit 4 are likely to interfere with attainment of the fine particulate matter (PM_{2.5}) ambient standards in the greater Cincinnati PM_{2.5} nonattainment area or in a separate

PM_{2.5} nonattainment area in Ohio.¹ (See EPA's request in their March 15, 2006 Comments (at 7).) Because EPA has not yet promulgated PM_{2.5} implementation rules officially establishing the pollutants affecting PM_{2.5} ambient air quality concentrations, EPA has recommended (in interim guidance dated April 5, 2005) that direct PM₁₀ emissions be used as a surrogate to address the NSR requirements for the PM_{2.5} ambient standards. In response to the EPA comment, and using the approach suggested by EPA guidance, EKPC reviewed its previous Unit 4 modeling results for PM₁₀ and assessed whether concentrations attributable to Unit 4 would exceed the PM₁₀ significant impact levels at the nearest PM_{2.5} nonattainment areas.

As explained in the Air Quality Analysis of EKPC's September 13, 2004, PSD permit application for Spurlock Unit 4, a detailed analysis was done to determine whether Unit 4's emissions of PM₁₀ would have a significant impact at any point beyond the boundaries of the plant site.² That analysis showed that the greatest distance from the plant at which Unit 4 PM₁₀ emissions will have a significant air quality impact is 2 km. In other words, the detailed modeling analysis submitted by EKPC as part of its PSD permit application for Spurlock Unit 4 demonstrates that at all points more than 2 km from that Unit -- and the EPA-designated PM_{2.5} nonattainment areas are both more than 2 km from the Spurlock plant site -- particulate emissions from Unit 4 will not have a significant

¹ EKP VOC emissions (Unit 4 and Unit 3 combined) are less than 100 tons per year. Therefore, an ambient impact analysis is not required for ozone per 401 KAR 51:017, Section 7(5). Additionally, emissions from Unit 4 are not significant as they are less than 40 tons per year at 24.53 tons per year.

² EKP's modeling analysis also considered whether other emissions from Unit 4 would have significant off-property impacts. As summarized in Table 4-2 of that analysis, an initial screening analysis showed that SO₂ and PM₁₀ were the only pollutants for which significant off-property impacts were predicted to occur; thus, more refined modeling was done to analyze whether those impacts would adversely impact compliance with any applicable ambient air quality standards or PSD increments. The initial screening analysis showed that maximum impacts of NO_x and CO for all averaging periods were below the significant impact levels for all modeled years of meteorological data and, therefore, would not have the potential to cause or contribute to any increment (NO_x only) or ambient standard violation.

impact on ambient particulate matter concentrations. See Section 4.3 of the Air Quality Analysis in the PSD Permit Application for Spurlock Unit 4.

The Division accepts this analysis as showing that EKPC has satisfied the requirement to demonstrate that Spurlock Unit 4's projected emissions of particulate matter will not contribute significantly to any violation of a particulate matter ambient standard in a downwind PM_{2.5} nonattainment area.

GROWTH ANALYSIS

The proposed project, as reported in the application, will employ an insignificant number of local new employees with comparison to the area population. There should be no substantial increase in community infrastructure, such as additional school enrollments. The proposed project is also not expected to result in an increase in secondary emissions associated with non-project related activities. Thus, in accordance with PSD guidelines, the analysis of ambient air quality impacts need consider only emissions from the facility and its ancillary devices.

SOILS AND VEGETATION IMPACTS ANALYSIS

No significant off-site impacts are expected from the proposed action. Therefore, the potential for adverse impacts to either soils or vegetation is minimal. It is concluded that no adverse impacts will

occur to sensitive vegetation, crops or soil systems as a result of operation of the proposed project.

VISIBILITY IMPAIRMENT ANALYSIS

As discussed previously, the visibility at Mammoth Cave National Park was reviewed using the visibility function in the CALPUFF model. The projected change in visibility associated with the operation of the proposed facility has been determined to be minimal. Additionally, the Commonwealth of Kentucky has not identified any sensitive Class II areas in the vicinity of the proposed plant.

CONCLUSION AND RECOMMENDATION

In conclusion, the Division has made a preliminary determination that the proposed construction meets all applicable requirements:

1. All the emissions units are expected to meet the requirements of BACT for each significant pollutant. Additionally, each applicable emission limitation under 401 KAR Chapters 50 to 65 and each applicable emission standard and standard of performance under 40 CFR 60, 61, 63 and 64 will also be met prior to proposed/final permitting.
2. Ambient air quality impacts on Class II areas are expected to be below the significant impact levels. No unacceptable adverse impact is expected on any Class I area.
3. Impacts on soil, vegetation, and visibility have been predicted to be minimal.

A draft permit to construct and operate a nominal 300 MWe circulating fluidized bed electric generating facility in Mason County, Kentucky containing conditions which ensure compliance with all the applicable requirements listed above has been prepared by the Division and is being issued for public notice and comment. A copy of this preliminary determination will be made available for

1. Mason County Clerk's Office, 27 West Third Street, Maysville, KY 41056-0234
2. Division for Air Quality, 803 Schenkel Lane, Frankfort.
3. Division for Air Quality, Ashland Regional Office, 1550 Wolohan Drive, Suite 1, Ashland, KY 41102-8942.

OPERATIONAL FLEXIBILITY: N/A

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.

PAST PERMIT SUMMARY:

Permit type	Log #	Complete Date	Issuance Date	Summary of Action
V-97-050 Title V	50089	2/11/1997	12/10/1999	Initial Title V w/Acid Rain
V-97-050 Revision I Title Renewal w/ Acid Rain, NOx Budget	53775	2/8/2002	8/4/2002	Addition of the CFB design Boiler 2500mmBtu/hr (EP-08)
V-97-050 Revision II	56671	7/22/2004	7/23/2004	Material error correction